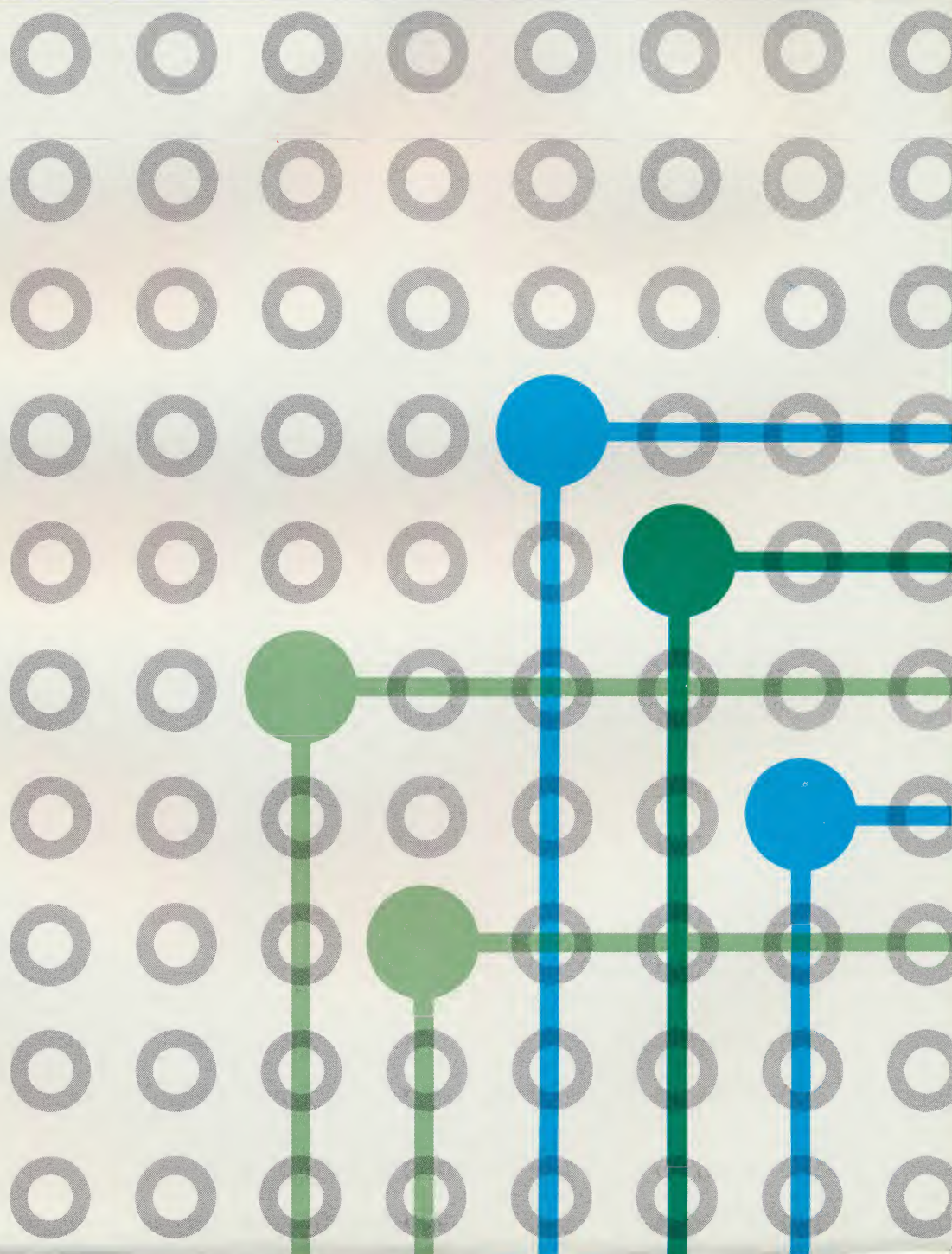
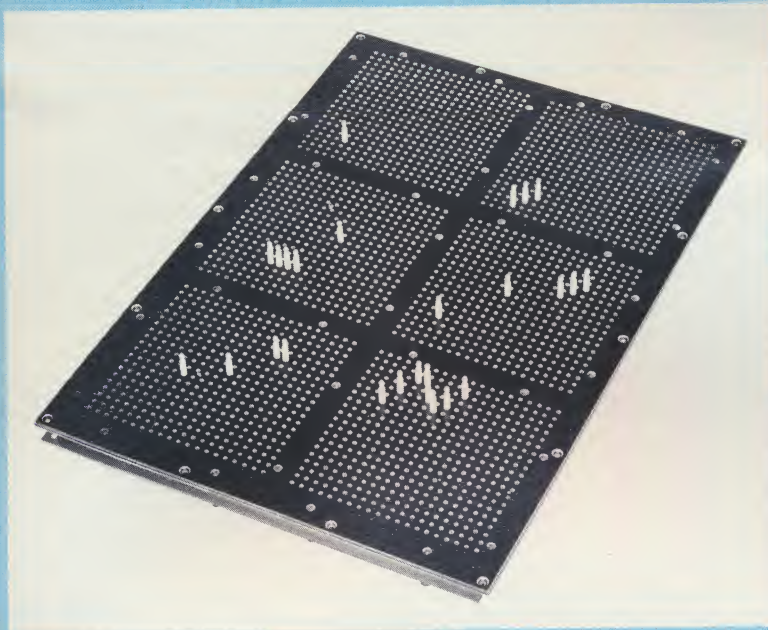


the advanced system for function programming

 SEALLECTOBOARD[®]



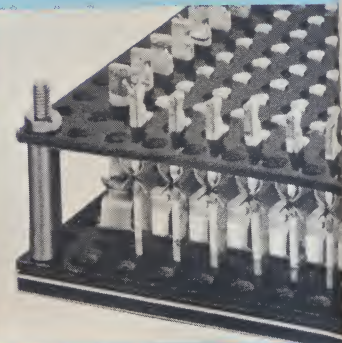
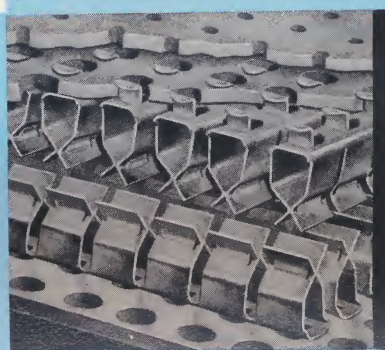


- LOW INITIAL COST.
- PRECISELY MADE OF HIGHEST QUALITY MATERIALS FOR LONGEST LIFE.
- PERMITS INSERTION OF COMPONENTS IN CIRCUIT WITHOUT SOLDERING.
- PERMITS CENTRALIZED, SINGLE POINT CIRCUITRY CONTROL
- MINIATURIZED TO SAVE SPACE.
- X-Y LOGICS MAY BE IDENTIFIED ON PANEL BOARD RELATED TO ASSOCIATED CIRCUITS OR FUNCTIONS.
- NO PATCH CORD CLUTTER.
- ALL ACCESSORIES COMPLETELY INTERCHANGEABLE.
- DESIGN FLEXIBILITY

The Selectoboard is a multiple pole, multiple throw switching device providing virtually an unlimited degree of versatility in interconnecting electronic or electrical circuitry. It provides complete programming, multiple functions for systems, equipments, processes, bread-boarding, and trouble-shooting readout centers.

The Selectoboard replaces patchboards utilizing bothersome plugs and jumper cords, expensive multi-point switches, and other previous designs for programming.

The applications for the Sealectoboard are practically unlimited. It is applicable and used in computers, signal or energy distribution networks, flight simulators, lighting systems for special effects, telephone switching, machine tool control, telemetry systems, circuit test centers, process control, radar control, thermocouple and other transducer control centers, aircraft instrumentations programming, and a host of other industrial and military applications.



Designed to your specific requirements

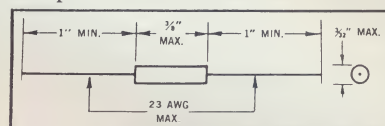
Sealectoboard may be designed and constructed to meet your specific requirements. The information presented in this catalog covers the basic functioning and parameters of capabilities of the Sealectoboard. It is recommended that you submit your specific mechanical and electrical needs to Sealectro for the most logical Sealectoboard design proposal.

Two standard configuration models are described on the rear cover of this catalog. These Proto-Kits are available as standard, off-the-shelf items.

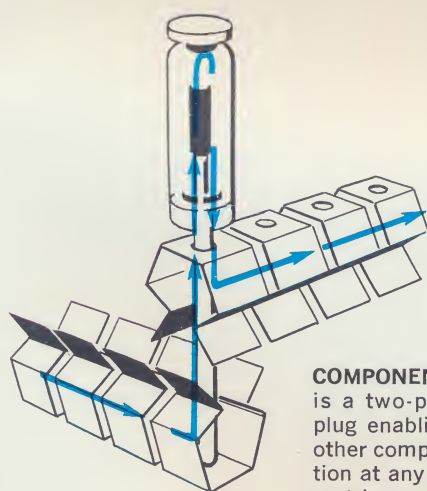
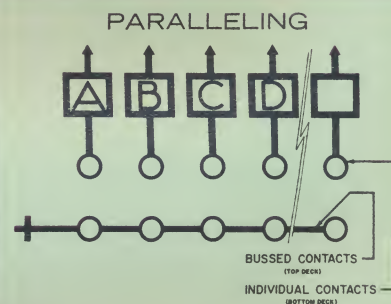
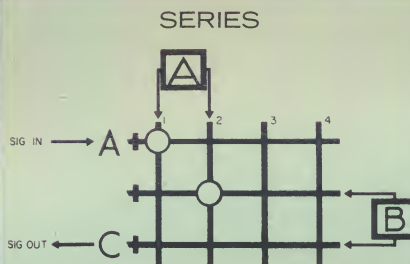
OPERATION AND FUNCTION

The Sealectoboard consists of two planes of continuous contact strips running at 90° to each other. These insulated planes and strips form an electrical matrix of an X- and Y-axis. Terminations for the contact strips are brought out through the bottom of the assembly for connection to associated circuitry. The entire assembly is sandwiched between non-conductive boards. The top board, or panel, provides insertion holes (.250 c/c) at every intersection of the X- and Y-coordinates. Insertion of a shorting pin connects the upper and lower deck, thus providing the desired logic between the X- and Y-axis. Insertion of a component holder inserts the component between the desired points in the associated circuitry.

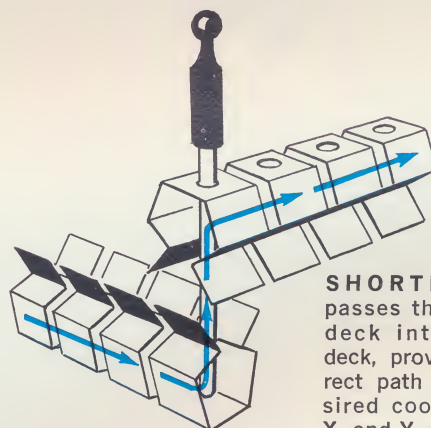
Pins Two basic pins are available for use with the Sealectoboard. The shorting pin is used for direct connections between the two contact decks. The component holder provides an electrical path from both decks to a convenient fixture incorporated in the handle which will accept any component within the parameters shown in drawing at right.



Function versatility is extended by choice of insertion pins. In addition to shorting pins, component holders may be used for diodes, resistors, pilot lights, and capacitors. While wireable plugs may be used for connecting associated circuitry.



COMPONENT HOLDER is a two-pole coaxial plug enabling diode or other component insertion at any point in the matrix.



SHORTING PIN passes through top deck into bottom deck, providing a direct path at the desired coordinate of X- and Y- axis.

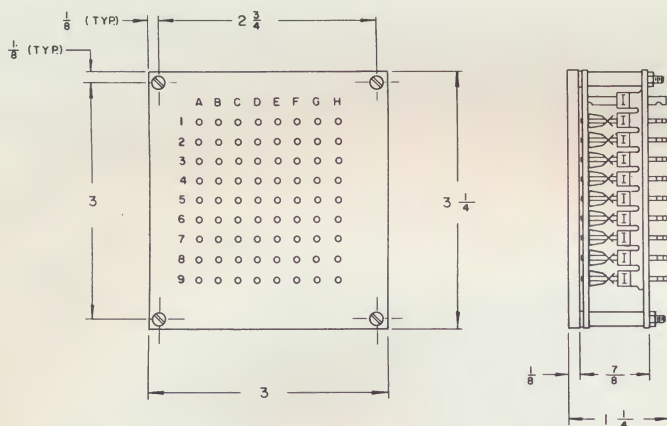
Function Color Code

All shorting pins and component holders are available in ten E.I.A. colors for function coding.

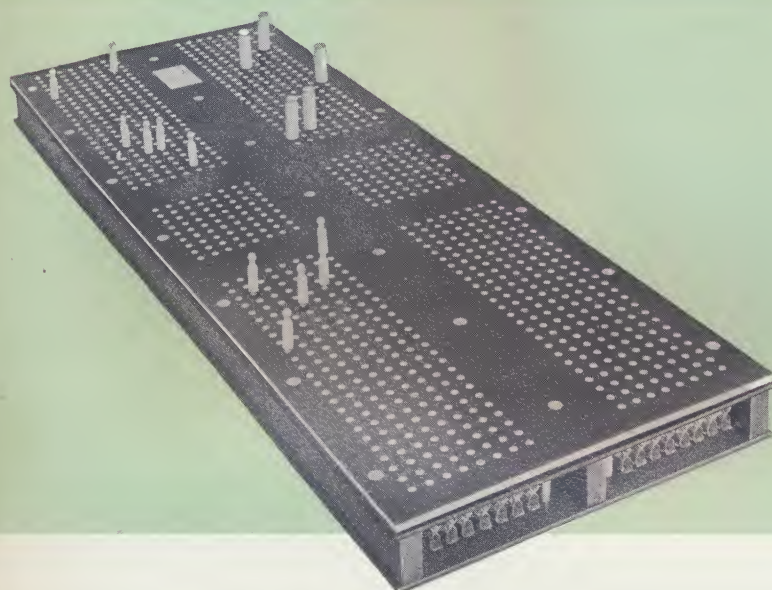
Electrical ratings

Maximum voltage	500 volts DC
Flashover at sea level	5000 volts DC
	between planes
	3500 volts DC
	between adjacent strips
Maximum current	5 amperes
Contact resistance	5 milliohms*
Diode holder voltage rating	250 volts DC

*Materials and finishes described on Page 4 result in long-term, low resistance contact characteristics.



Thousands of switching points may be provided in a small area with the Sealectoboard. For example: In a 9 x 8 Sealectoboard, 72 coordinates are provided in a space only $1\frac{7}{8}$ x $2\frac{1}{8}$ inches.



Materials

Materials are available for either military or industrial requirements. Standard materials are as follows:

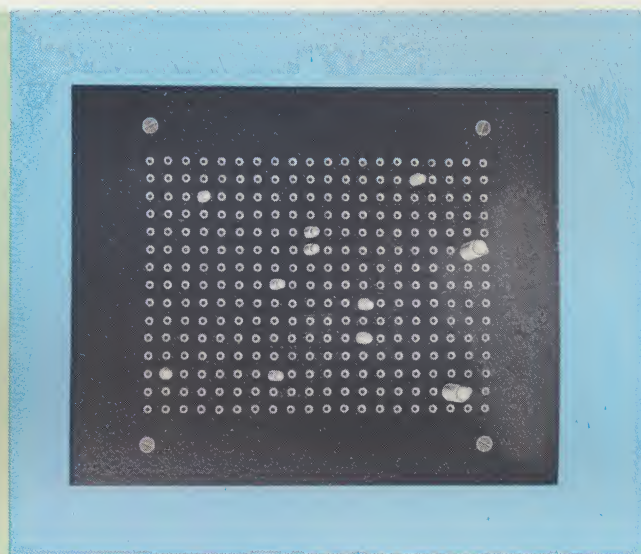
BOARDS High dielectric strength plastic.

CONTACT STRIPS . . Beryllium copper, overall silverplated is standard. Pin/socket contact maintained on cross-cylinder principle for lowest contact resistance and moderate contact pressure. Insertion of .063" pin opens socket only a few thousandths of an inch with adequate contact pressure due to pre-loading of the socket, assuring long service life.

PINS Handles made of high dielectric strength plastic. All contact surfaces are silverplated. Choice of any standard EIA colors on handle. Component holder also available in transparent handle for identification of component.

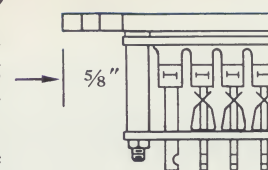
MECHANICAL SPECIFICATIONS

The basic matrix dimension of the Sealectoboard is .250" center-to-center, as controlled by the spacing of the contact strip. Insertion holes may be spaced further apart provided the center-to-center dimension remains in increments of .250". Overall depth is $1\frac{1}{4}$ " as shown left. In large area boards it is necessary to place stiffeners at intervals to eliminate flexing and resulting shorting between contact planes. Continuous contact strips may be provided up to 64 points, on a single axis. Longer axis lengths, or axes lengths in both the X- and Y- directions will be broken by stiffener insertions which require .250-.500" panel space.

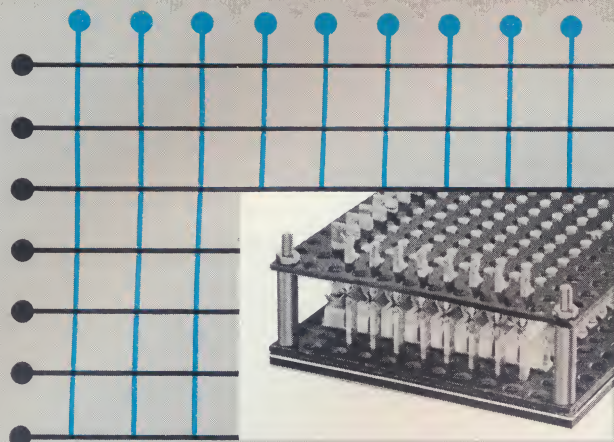


Mounting

The Sealectoboard may be either flush or surface mounted. Standard mounting for flush installations is a $\frac{5}{8}$ " overhang of the top panel with mounting holes. The overhang may also be notched for standard relay rack installations. For surface mounting the screw studs running through the assembly may be extended and used with an extra complement of nuts.

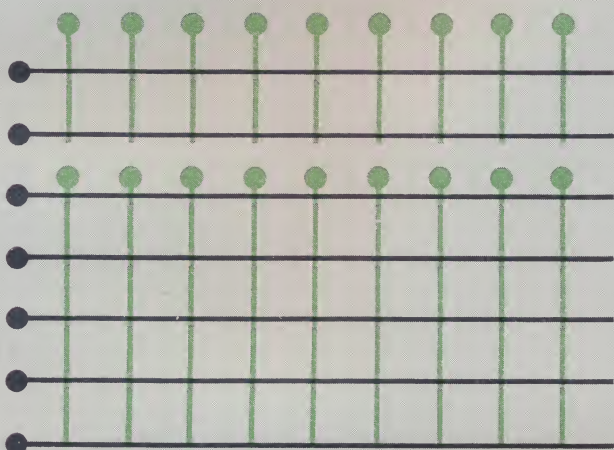


Contact plating . . . standard is silver. Gold-plated on special order for applications such as thermocouple programming.



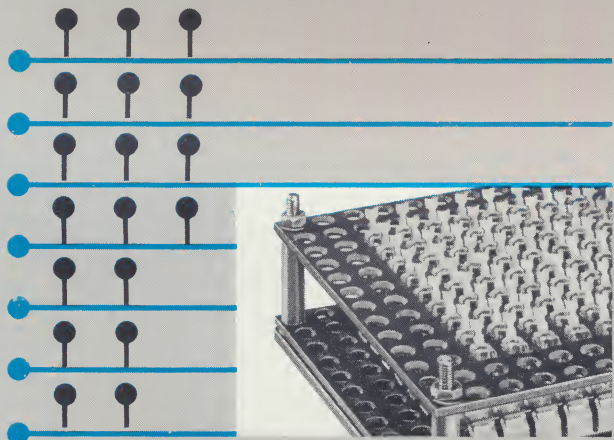
ELECTRICAL DESIGN SPECIFICATIONS

The standard electrical configuration of the Sealectoboard incorporates continuous electrical contact strips for each terminal on the two axes. This provides two lines of terminals running along the two axes on the bottom deck. However, it is often necessary to group contact points, thus providing electrical isolation for associated circuitry. Sealectro engineers will design the Sealectoboard to provide the programming logic necessary for your application.



Group Bussing

Group bussing of contact points, though normally limited to the lower deck, also can be achieved on the upper deck. Usually the upper deck remains as continuous strips, unless a dividing space is inserted on the board matrix. This is necessary so terminations of the upper deck may be brought out through the lower cover board. However, any bussing, or grouping combination may be used on the lower deck and still maintain the overall matrix without disturbing the .250" matrix pattern in either direction.



Individual Contacts

As with group bussing, individual contacts may be provided for every coordinate point from the lower deck without the need for spacer areas in the matrix. The use of individual contacts provides (1) individual electrical access to each hole, and (2) a path between many terminals and a lesser number of bussed terminals.

R F. shielding

For applications in radio-frequency circuits, the Sealectoboard may be shielded between strips or between connecting points, thus eliminating any cross-talk. The material used, and method of shielding, depends upon frequency of circuits. Submit your r.f. requirements to Sealectro for proposal.

DESIGNED TO YOUR REQUIREMENTS

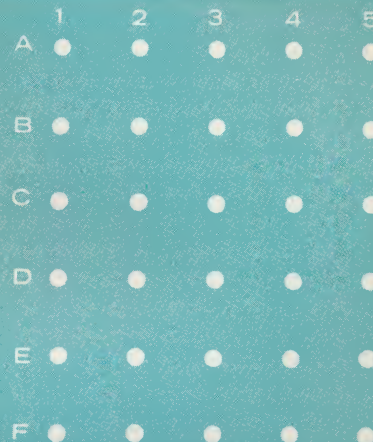
The Sealectoboard is basically a function program board. In many applications the board itself may, in effect, present a flow diagram of the system which it is controlling. This phenomenon is carried through by the aspect ratio of the matrix, grouping of insertion holes, markings, and in some cases, board-mounted components.

NOTE



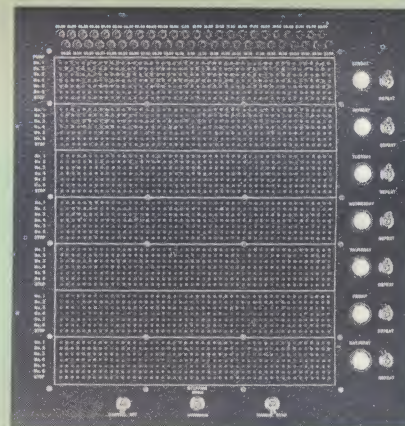
Panel markings

The operating panel of the Sealectoboard may be engraved according to the user's requirements. The panel is a high gloss black panel. Engraving is in dead-white of high legibility. Lettering and numbering is sans-serif, open type face. A vertical space of $3/32$ " must be allowed for each character. Vertical rows of numbers or characters are standard center line, as shown at left. Color coding may be wiped in upon special order.



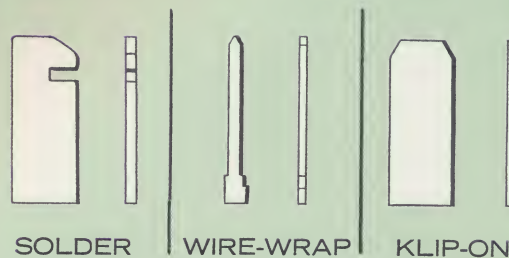
Board-mounted components

In many installations it is desirable to mount pilot lights, sockets, or other components directly on the Sealectoboard panel in order to relate functions. In such cases, Sealectro installs, internally wires, and delivers the complete program board ready for operation.



Terminal Configurations

Contact terminals are available as solder, wire-wrap or tab types. Standard terminal is solder-type. Wire-wrap configuration meets industry standards for corner contours. Tab-type mates with all popular quick connect-disconnect female connectors.



SOLDER

WIRE-WRAP

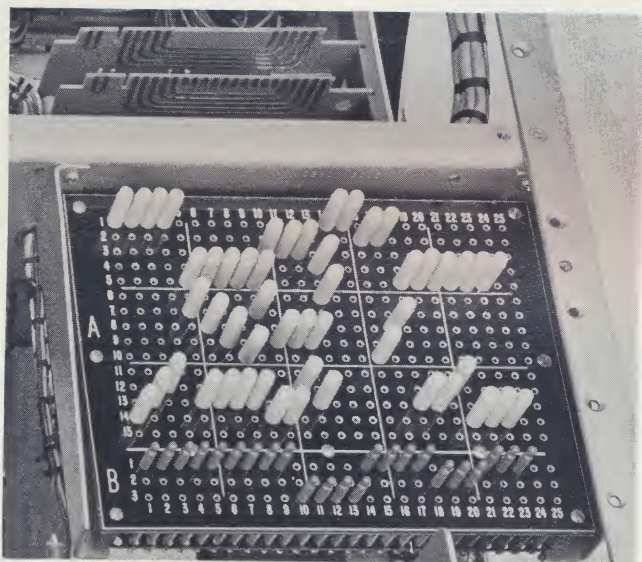
KLIP-ON

FOR SIMPLIFIED PROGRAMMING

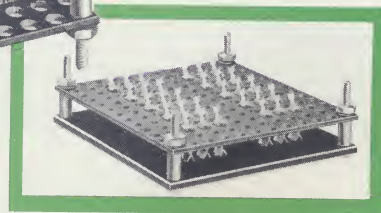
No single development has ever added so much convenience, simplicity of operation, economy, and versatility to the programming of electronic and electrical equipment as the Sealectoboard. This amazingly simple device has opened new horizons in design, manufacturing and process control techniques.



The Sealectoboard is finding use in the programming of sub-circuits in performing functions for "black-box" equipment.



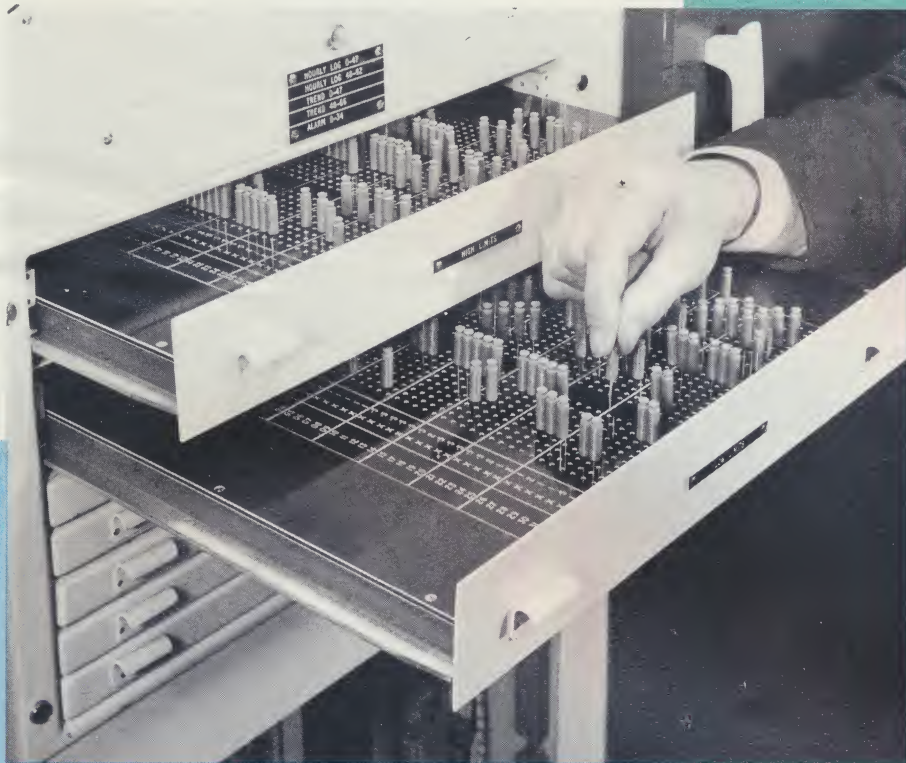
In addition to two-deck models, the Sealectoboard is available in single deck, multi-socket versions for high speed aging or testing of components. In such models, every contact is isolated and brought through the bottom board as a separate contact.



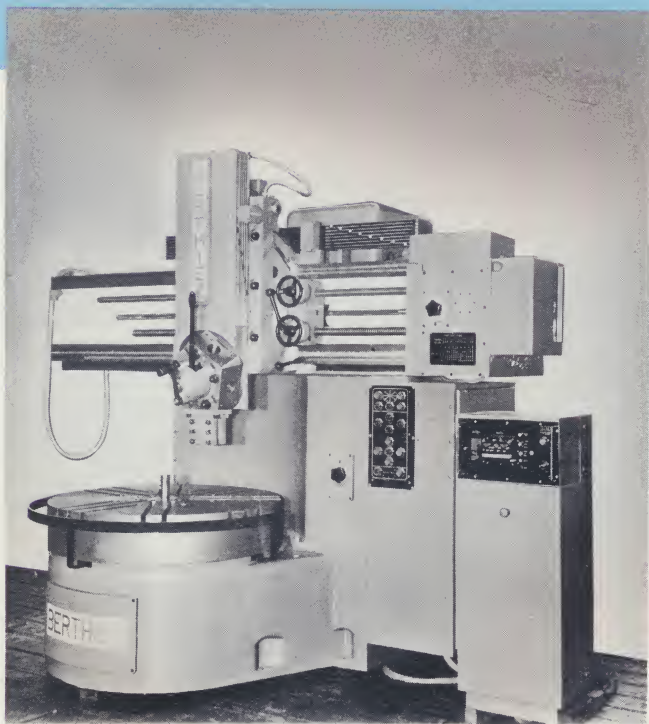
With the use of diode holders, the Sealectoboard may be used in digital programming of computers. Utilizing the diode holder to carry resistors or capacitors, the Sealectoboard may be used as a decade, building desired resistance or capacitance effects. As a straight switching device, the Sealectoboard provides a multiplicity of poles and throws unobtainable in even the most expensive multi-point switches.

Sealectro mask

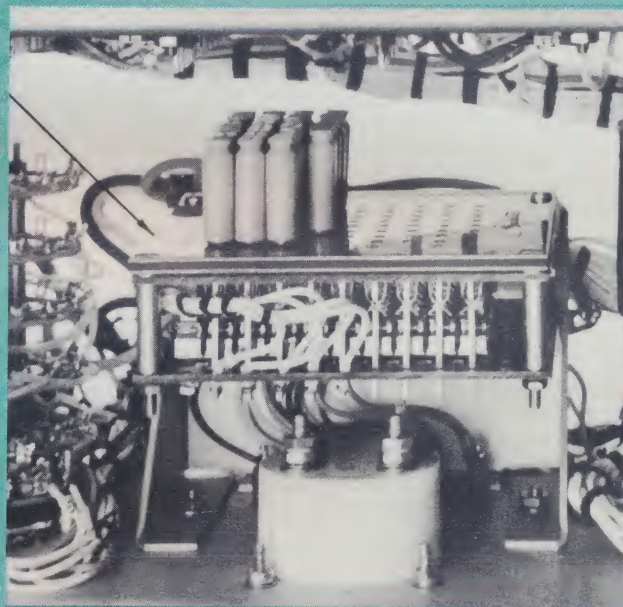
For pre-planned programming Sealectro provides the Sealectro mask. This mask—a long-lasting, high strength plastic—is pre-printed with the matrix design of the Sealectoboard. When the desired program has been punched, the mask is oriented to the panel board simply through the insertion of locating pins. The operator then merely slips pins through the openings in the mask to achieve the desired programming logic. These film-thin masks, moreover, can be easily filed, thus providing instantaneous, positive programming control for future operations.



The Sealectoboard is extremely compact for the number of functions handled. Drawer-mounted Sealectoboard are used for high and low alarm limit setting on a Data Logger/Alarm Scanner, utilizing diode holders.



A 9 x 8 Sealectoboard employing diode holders programs a signal generator by setting the pattern of marks and spaces for electronic scanning. The board is connected into associated circuitry in such a manner that the top five coincident rows generate the mark-space pattern by the insertion of a diode holder for a mark, and an empty hole creating a space. The bottom four rows of contacts are used as storage units for the unused diode holders.



Sealectoboard programs machine tools by setting travel limits of carriage, spindles, tools. In this application, a Sealectoboard channels signals between limit switches and power relays, which in turn actuate the mechanical and hydraulic travel operations. The sequence is governed by the set-up of the Sealectoboard. Once the setup is made on the Sealectoboard, a glass paneled door is closed and locked over the programmer, preventing unauthorized changes in function programming.

TYPICAL FUNCTION PROGRAMMING CIRCUITS

Typical Function Programming Circuits

For analog programming the Sealectoboard is used to connect amplifiers, function generators and components as required by a particular problem. In Figure 1 an amplifier feeds a capacitor and a resistor which are plugged into the board on component plugs. The components are across the input of a function generator whose output is loaded by a resistor plugged into the board on a component holder and a plotter. Direct connections are made with shorting pins, and series or parallel components are added at one grid junctions as required by using component holders—so-called "diode holders".

Digital programming is accomplished by using the Sealectoboard in building "and" or "or" gates as required. Fig. 2 shows several inputs combined into two groups. One output is shown connected externally; the other is connected by shorting pins to an amplifier and a register.

Breadboard Circuitry

Fig. 3 shows a bridge circuit of four diodes with a meter connected across the output. This circuit is quickly assembled using standard diode holders, shorting pins and connector plugs as in Fig. 4. The diode holders permit quick interchange of components without need of unsoldering and resoldering components. This not only saves time but also conserves hard-to-get components such as experimental diodes and other components easily damaged by heat or handling.

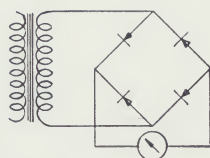


Fig. 3. BRIDGE circuit schematic.

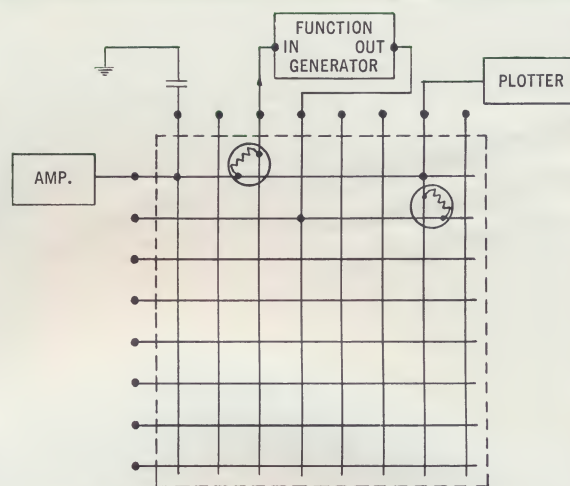


Fig. 1. ANALOG computer circuit is programmed using an amplifier driving a capacitor and resistor combination with a function generator. A plotter and resistor load the output of the function generator.

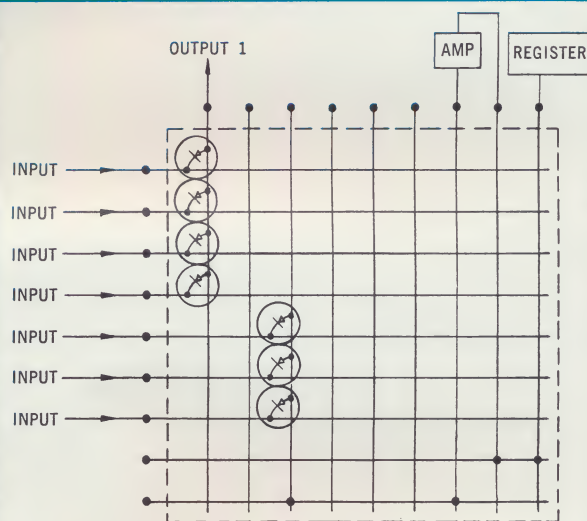


Fig. 2 DIGITAL LOGIC pattern of two "AND" gates, with one leading to external output and the second to amplifier and register is shown.

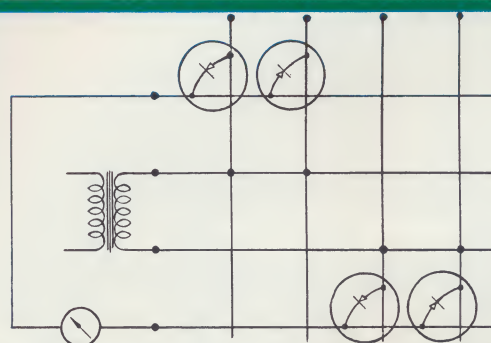


Fig. 4 BRIDGE CIRCUIT on Sealectoboard requires only four component (diode) plugs, four connector plugs and two shorting pins. Diodes can be quickly substituted for comparative tests.

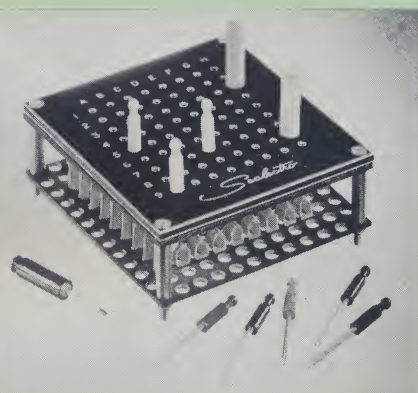
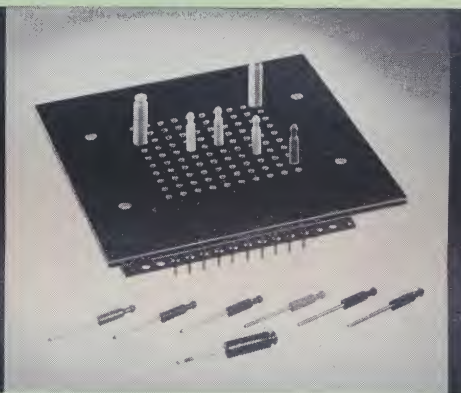
SEAELECTOBOARD PROTO-KITS[®]

Seaelectro offers you an economical, positive method for testing and evaluating the Seaelecto board in your prototype work. The Proto-Kit, available in two models, is a LOW COST, complete Seaelecto board system capable of providing every function of a program board . . . switching, programming, inserting components, etc. These units are available from your local Seaelectro distributor, completely packaged, ready to use.

9 x 8 PROTO-KIT consisting of a 9 x 8 Seaelecto-board, 8 shorting pins and 3 component holders.

10 x 10 PROTO-KIT consisting of a 10 x 10 Seaelecto-board, 10 shorting pins and 3 component holders.

Additional shorting pins and component holders are also available from your Seaelectro distributor at nominal cost.



**PROTO-KITS ARE AVAILABLE FROM
YOUR LOCAL
SEAELECTRO DISTRIBUTOR**



Seaelectro CORPORATION
139 HOYT STREET • MAMARONECK, N. Y.

Manufacturers of . . .

"Press-Fit" Teflon Terminals, "ConheX" Sub-miniature r.f. Connectors, and Delttime Magnetostrictive Delay Lines.